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COVER REQUIREMENTS OF THE EASTERN RUFFED GROUSE IN NORTHEAST IOWA¹

By EMMETT B. POLDERBOER

In Iowa the Eastern Ruffed Grouse (*Bonasa umbellus umbellus* L.) range has been reduced from an original area of 90 counties to about a scant half-dozen in the northeast corner. An investigation of the factors that maintain them in their present limited range was conducted in the vicinity of Lansing, Allamakee County, August, 1938-January, 1940, inclusive.

Situated on the Mississippi River bluffs, the research area contained 3,204 acres of which 1,414 acres were in deciduous forest. Dairying was the most important phase of agriculture in the district. The intensity of pasturage for cattle and horses varied from one head of stock to 2 acres in the valleys to one head to 17 acres in densely wooded pastures. The average stocking was one head to 5 acres.

The writer is indebted for guidance to Dr. George O. Hendrickson, Iowa State College, and Thomas G. Scott, United States Fish and Wildlife Service. Some assistance in checking broods and populations was given by residents of the area.

Censusing of grouse was accomplished by flush counts taken along lines traversed on the area at intervals of 45 yards. Cover use census was determined along lines at approximately 100-yard intervals spaced so that a maximum of cover types could be traversed and examined. Roughly, 15 miles of the cover census line were in valley forest, 15 miles in hillside forest, and 15 miles in ridge-top forest. Notations were made on sex, flushing distance, direction of flight, flight distance, refuge cover, roosts, dust baths, preening, and seasonal cover use. Additional data on drumming cover, nesting cover, brood cover, and roosting cover were obtained by search in situations not restricted to the census lines.

The comparative percentage of observed cover type usage for each month during the entire period of the investigation is given in Table 1.

In winter, the varying depths of snow apparently influenced the types of cover selected. In January, 1939, during which very little snow was present, maple-linden communities densely undergrown with dogwood were preferred. In January, 1940, with snow deep in the forest, most of the grouse were found in cut-over oak-hickory cover during the day, loafing and feeding on ridge tops, south slopes, and edges of clearings. With snow present in February, 1939, cover use very similar to that of January, 1940, was noted with the exception that 10-20-year-old cut-over oak-hickory stands were preferred to the 20-35-year-old oak-hickory communities.

Drumming activity and the scattering of small groups began early in March and continued through April. The average winter flushing distance of 25 yards was reduced to 12 yards in the nesting season. On April 14, 1939, a pair of grouse were seen copulating and additional early afternoon activity observed at this time indicated that the mating season was well under way. During that season a wider variety of cover was used and a preference for mature forest and clearings in contrast to fall and winter favoring of cut-over types was noted. In May, because only males were flushed, it is assumed that most of the females were nesting. From the small amount of nesting data obtainable, it seems probable that most of the female population was in the advanced and mature oak-hickory communities until the end of the nesting season, whereas the males preferred the cut-over formations, especially oak-hickory and advanced maple-linden woods.

¹Journal paper No. J-1056 of the Iowa Agricultural Experiment Station, Ames, Iowa, Project 647. The Fish and Wildlife Service (U. S. Department of the Interior), Iowa State Conservation Commission, and American Wildlife Institute co-operating.

Table 1. Total Percentages of Observed Cover Use During 1938, 1939, and 1940

Month, Year	A	B	C	D	E	F	G	H	I	J	K	L	M
Jan., 1939		6			31				31		25	6	
Jan., 1940					23		41	13	6		7	9	
Feb., 1939	8			3	8		26	45			10		
March, 1939	25			6		6	6				13	44	
April, 1939	19	9		5	10	9	19	19			5	5	
May, 1939					20		40	20				20	
June, 1939				19								81	
July, 1939								31			44	25	
Aug. 1938		48			4							48	
Aug., 1939		32			35						3	29	
Sept., 1938		6		19	6	6	31	13			6	13	
Sept., 1939	19	9				5	5	19	24		10	5	4
Oct., 1938				4	7	2	47	11	2			22	4
Oct., 1939	11			3			48	24	1	1	3	9	
Nov., 1938							74	17				9	
Nov., 1939				9			27	27				36	
Dec., 1938				5	2	2	40	12			2	36	
Dec., 1939	6			10			36	31	3	2	10	2	

Key to Cover Communities Tabulated Above

Mature

Quercus-Carya (oak-hickory) association over 80 years old

A

Acer-Tilia (maple-linden) association over 80 years old

B

Fraxinus-Ulmus (ash-elm) association over 80 years old

C

Advanced

Quercus-Carya association 35-80 years old

D

Acer-Tilia association 35-80 years old

E

Fraxinus-Ulmus association 35-80 years old

F

Second Growth

Quercus-Carya associes and a *Cornus-Corylus* (dogwood-hazelnut) layer 20-35 years old

G

Quercus-Carya associes and a *Cornus-Corylus* layer 10-20 years old

H

Quercus borealis-Tilia-Acer-Betula (red oak-linden-maple-birch) faciation 20-35 years old

I

Quercus borealis-Tilia-Acer-Betula faciation 10-20 years old

J

Populus (poplar) consociation

K

Clearings

Saplings, stump sprouts, and briars (*Smilax*) 5-10 years old

L

Early herb and briar stage 1-5 years old

M

Table 2.* Availability Use of Cover by Ruffed Grouse

Cover type	Acres of cover type	Percentage of cover type in the area	Percentage of grouse using each cover type	Availability-use coefficient
A	338	23.5	7.2	0.3
B	62	4.3	6.1	1.5
C	15	1.1	0.0	0.0
D	312	21.6	5.4	0.2
E	186	12.3	6.9	0.5
F	48	3.3	1.6	0.5
G	163	11.3	16.8	1.5
H	51	3.5	18.5	5.0
I	79	5.5	4.8	0.9
J	31	2.1	0.2	0.1
K	23	1.5	9.7	6.1
L	99	6.9	22.0	3.3
M	36	2.5	0.8	0.3

*Key in Table 1.



RUFFED GROUSE TERRITORY IN NORTHEASTERN IOWA

A. Oak-hickory second growth 10-20 years old, with dogwood-hazelnut layer, heavily used by Ruffed Grouse; B. Poplar, with hazelnut and sumac, used for roosting and loafing; C. White oak drumming log.

Records for June and July, 1939, were chiefly of broods of young and signs of activity. Clearings 6 and 7 years old were used extensively by broods of young in June. Cover used by male grouse and hens without broods was not determined at that time. In July small clearings, resulting from the removal of one to three large trees from the edges of mature and second growth oak-hickory communities, and well overgrown with hazelnut, briar, and dogwood, were used extensively for loafing. Young weedy clearings less than 3 years of age showed no signs of utilization. Pure poplar, mixed poplar and clearing types at the edges of mature oak-hickory formations appeared to be quite attractive as cover in July.

During the late summer period beginning early in August valleys below north and east slopes were used extensively. Hens with young were often found in bramble (*Rubus*) thickets and brushy ravines on those slopes. Adults without broods were encountered frequently in mature maple-linden communities on north and east slopes. Late in August and early in September the grouse apparently were molting. During this period they were found along bluffs and ravines on east and north slopes in advanced maple-linden communities. At this time they were reluctant to flush and usually escaped by running down the ravines and hillsides. By mid-September the birds flushed readily when approached. From mid-September until snowfall in December the 10-20- and 20-35-year-old oak-hickory communities were the most used loafing cover types on the area.

During rainy weather in autumn the brushy second growth was forsaken for more open woods, chiefly of the mature oak-hickory type. Grouse were seen on limbs next to the trunks of large trees and on the ground beside tree trunks during rainstorms.

Although a large percentage of the grouse was flushed from forest types extensive in area, smaller areas of other cover types often had high concentrations of grouse. The relative value of each cover type was computed with the formula, Coefficient of availability use = $\frac{\text{percent of cover use}}{\text{percent of forest type}}$. In Table 2 it can be seen that forest types of prime importance are in order: Populus consociations, 10-20-year-old oak-hickory, and 5-10-year-old clearings. Advanced oak-hickory and 20-35-year-old second growth oak-hickory rank high enough in availability use to be considered as valuable cover.

In 18 months 116 night roosts were found. Advanced maple-linden formations on north and east slopes undergrown with alternate-leaved dogwood were used predominantly in the spring and fall. Oak-hickory forest on southeast, south, and southwest slopes, with an underlayer of hazelnut and panicle dogwood, was second in importance as year-round roosting cover and was used most often throughout the fall and winter. Cover consisting of stump sprouts, briars, sumac (*Rhus*), and hazelnut, in greatest abundance at edges of forests and open fields, ranked third and was used in summer by hens and chicks and in mid-winter by most of the birds following the fresh deep snowfalls.

Drumming cover was used extensively from mid-March to early May. No one particular cover type preference was noted. The presence of a log more than 7 feet long and 10 to 24 inches in diameter seemed to be the prime essential. As many as four such logs were found to be used in a territory by one male. Oak logs with the bark removed from the top surface were the most common drumming logs on the area.

Two successfully hatched nests and a deserted nest were found during the investigation. Each of the nests was found in advanced open oak-hickory woods at distances of 2-6 yards from a road or cowpath. At all three nest sites the ground cover consisted chiefly of white oak (*Quercus alba*) leaves to a depth of an inch or more. The nests were in leaf-filled depressions close by the trunks of trees in two cases and beside a log in one instance. Sub-layer vegetation consisted of inter-

rupted fern (*Osmunda Claytonia* L.) and blueberry (*Vaccinium*) of very sparse growth near the nests.

Brood data for the summers of 1938 and 1939 were obtained from observations of six broods of young. During the first half of June clearings, trailsides, and bramble patches in valleys and at the mouths of open ravines were used for foraging. Maple-linden communities near these valley clearings were used as escape cover and storm cover. In late June and throughout July bramble patches and clearings on ridge tops were used by the broods. The maximum range of young broods was found to cover an area with a diameter of at least 60 rods.

Molting of contour feathers was observed as early as August 7 in 1939. Apparently on that date all birds were quite capable of sustained flight. By August 14 considerable feather shedding was evident and tertial feathers were noted in dust baths and loafing places. From mid-August until the second week in September the molting adults were found on east and north slopes near the edges of bluffs and ravines and in shaded valleys and ravines overgrown with ferns, brambles, and briars.

Pasturage of livestock did not seem to present a serious problem on the area. Both pastured and unpastured lands were used by nearly equal numbers of grouse. Most of the preferred types of loafing cover, such as poplar clearings and second growth oak-hickory communities, were found in or bordering on pasture lands. Unpastured lands were steep bluffs and untenanted lands overgrown with mature forest which seemed to be less attractive to the grouse. Timbered pastures on which more than one head to 5 acres was grazed were found to carry very low populations or no grouse at all.

Quadrat samples were taken in pastured forest areas where grouse were found quite consistently. The samples were 0.1 acre in size and laid out in a checkerboard pattern. Average plant cover densities were: 81 trees, 1-8 inches in diameter and 6-35 feet tall, to 0.1 acre, and 150 shrubs to the square rod. The tree formations consisted of mixed stands of second growth with an average of 36 percent black oak (*Quercus velutina*), 32 percent hickory, 17 percent aspen, 14 percent white oak, and 1 percent burr oak (*Q. macrocarpa*). Shrub growths contained an average of 48 percent hazelnut, 45 percent dogwood, 3 percent sumac, 2 percent bramble, 1 percent sandcherry (*Prunus pumila*), 0.5 percent grape (*Vitis*), and 0.5 percent New Jersey tea (*Ceanothus Americanus*). These growths were in mixed pasturelands where approximately 12.5 to 25 percent of the pastured area was open valley grassland.

Mature unpastured forest with 120-130 large trees to the acre and a dense ground cover of herbs was seldom used by the grouse. Mature woods with less than 50 trees to the acre, undergrown with dogwood, hazelnut, or brambles as thick as 3 plants to the square yard, often were temporarily used for loafing cover in both pastured and unpastured land. The most favored pastureland cover utilized by the grouse was in timber with a crown cover that would allow sufficient light to permit shrubs to grow to a density of from 3-5 plants to the square yard.

Fires escaped from woodcutters' brush-burning operations in the spring and fall, 1939. Spring fires burned over nearly two-thirds of the area in May when the grouse were beginning to nest. Although no nests were found in the burned area, fires may in part account for the recording of only five broods from a spring population of 45 grouse.

Fires in cut-over areas severe enough to kill hazelnut and dogwood undergrowth obviously ruined some favored loafing cover. The succession of ironweed (*Vernonia*), fleabane (*Erigeron*), and goldenrod (*Solidago*) that grew densely in the burned areas was not utilized as loafing cover. Advanced white oak woods suffered the loss of nearly the entire ground covering of leaves in the fall fires. The lack of

leaves affected loafing activities of the grouse although in feeding they entered burned areas quite often. The loss of roosting and loafing area concentrated the birds in spots at the edge of the burned areas but no evidence of reduction of the population was noted in December, 1939, or in January, 1940.

SUMMARY

1. For approximately 45 Ruffed Grouse on 1,414 forested acres in the vicinity of Lansing, Allamakee County, Iowa, from August, 1938-January 31, 1940, the following cover types were of greatest utilization value in the order named: Poplar consociations, 10-20 year-old oak-hickory forest, 5-10 year-old clearings, advanced oak-hickory forest, and 20-35 year-old oak-hickory forest.
2. Cover type groups utilized as loafing cover in order of importance were: Second growth clearings, advanced forest, and mature forest.
3. Most of the roosts found were on the ground. Winter roosts were chiefly under dogwoods in maple-linden communities on north and east slopes when no snow was on the ground. Following heavy snows the preponderance of winter roosts was found in clearings and in second growth oak-hickory communities.
4. Drumming logs selected by male grouse ranged from 10-24 inches in diameter and from 7-40 feet in length, without preference discerned for any age class, location, or type of surrounding cover.
5. Three nests were found, each within six yards of an open road or path, in mature and advanced white oak woods with an abundance of leaves on the forest floor.
6. Both upland and valley clearings, containing an abundance of brambles, located near maple-linden communities were used as brood cover.
7. Molting cover, in maple-linden woods and clearings in shaded ravines, was used extensively Aug. 15-Sept. 15.
8. Pastured woodlands, combined with open grass pastures in valleys, held grouse under grazing pressure as intense as one head of stock to 5 acres. Woodlands with undergrowth shrubs of a density of less than three shrubs to the square yard and a density of more than 50 mature trees to the acre were not suitable to the grouse.
9. Burning in the spring destroyed the desirable nesting habitat in two-thirds of the Lansing area. Fall burning of one-fifth of the area concentrated the grouse in a smaller amount of loafing cover but did not affect their feeding range to any extent.

RETURN TO BIRDS

A NOTE FROM THE PRESIDENT

By MARTIN L. GRANT

President, Iowa Ornithologists' Union

When cities prod me with demands
Of many minds and many hands . . .
And men bewilder men with words . . .
Gratefully I return to birds.

—LOUIS UNTERMEYER

By copying the above lines I have been spared the necessity of putting into my own words the reactions most of us may feel as a result of the general troubled conditions of 1942. Reread them—they need no further comment.

We have temporarily lost some members because of war conditions, and would be glad to secure replacements. It is, however, the policy of the Union to suspend the dues of all members who are serving in the Armed Forces of the U. S. But we who are still at home (temporarily?) need to continue our endeavors. Frankly, I do not feel it takes much of a philosopher to forecast that the scientific and esthetic

aspects of ornithology will continue long after this war is forgotten. Remember, you are doing someone a favor when you encourage his interest in birds. I have never known a person to regret in any way the time spent in bird study as a hobby.

Surely Editor Pierce would enjoy hearing from more of you. All readers look forward to the notes concerning rarities, oddities, and simple observations that anyone can write. We have some members, fortunately, who contribute a paragraph or two to almost every issue, but the Union as a whole would profit from additional contributions by more of the membership. Remember, it's your Union and your magazine, and, like everything else, you will get out of it just what you put in. If new contributors were never to appear, the magazine would soon die of senility.

A gentle reminder about dues, payable for 1943 on January 1st: one dollar as usual, in spite of increased taxes, rationing, and war. If the Secretary does not have to write to remind you individually, we can save significantly on postage and bookkeeping.

No bird enthusiast needs to be reminded of the Christmas Census, but I'll do it anyway. While we don't expect enough group trips to locate every bird in the state, we should be able to find most of the species and cover a wide enough variety of territory to make the totals representative. In sending your records to the Editor, be sure to include locality, date, time, temperature, weather, number of observers, and number of individuals seen of each species, with the species names arranged according to the A.O.U. 'check-list'. If you're worried about tires or gas, remember you don't need to go far, and you would probably see more if you'd walk anyway. Send your census to the Editor before February 1st.

Merry Christmas!

WARBLERS OF THE DUBUQUE REGION

By THE DUBUQUE BIRD CLUB*
DUBUQUE, IOWA

The topographical features of the Dubuque region need little description for bird students in the middle west. The Mississippi River flows southward through a country of much scenic beauty. High, heavily-wooded bluffs, carrying a wide variety of trees and floral life, rise above the river. In the river itself are wooded islands at intervals, and at the shores the stream tapers off into sheltered lagoons and bayous with rank vegetation. Situated in one of the principal bird migration routes, this Mississippi Valley region attracts a heavy transitory warbler population, and several species remain to nest.

Systematic bird work in the Dubuque region began in 1929, when the Dubuque Bird Club was organized. Since that time members of the club to the number of 20 or more have taken active part in the spring bird trips on which warblers have been a particular study. The results of these warbler studies are contained in the accompanying composite list, which names and gives the status of all warblers found in the region as far as our observations have disclosed up to the present time. Most of our members have observed the various warblers as they migrate through the region or remain to nest here. The names of several observers are given in connection with records of certain species in our descriptive list. Our study of warblers will continue in the future and we hope to learn many new facts about this very interesting group.

BLACK AND WHITE WARBLER, *Mniotilta varia*. The earliest date recorded for this common migrant is April 28.

PROTHONOTARY WARBLER, *Protonotaria citrea*. A fairly common

*Compiled by Mrs. Ralph W. Johnson from the members' records.

summer resident in the timbered bottoms along the Mississippi. Each spring for the last few years, a search of likely places has been made, but it was not until 1940 that these warblers were found in the vicinity of Dubuque. A bayou of the river located just east of the Dubuque-Wisconsin bridge, which contained a number of hollow willow trees, was discovered by Ethan Hemsley to be a regular nesting place of these birds. On May 31 of the same year, Lyle Bradley discovered the birds nesting at Massey Station, seven miles south of Dubuque. In 1942, no birds were observed because of high water, which undoubtedly disturbed many nests and caused a high mortality among young birds.

GOLDEN-WINGED WARBLER, *Vermivora chrysoptera*. This fairly rare migrant is seen nearly every year at only one location, the ravine mentioned below.

BLUE-WINGED WARBLER, *Vermivora pinus*. About two miles from Durango, Iowa, six miles from Dubuque is a wooded ravine which is a favored haunt of many warblers. The steep hillside, covered with low-growing shrubs and bushes, provides a summer home for the Blue-winged Warbler. The nests are well concealed, but the bird is always there with its peculiar buzzing call.

TENNESSEE WARBLER, *Vermivora peregrina*. The numbers of these migrating warblers seem to vary from year to year. Ethan Hemsley has noted that for years this bird was a regular visitor in his backyard, always remaining several days. In 1941 and 1942, it failed to put in an appearance. Lyle Bradley, on May 12, 1942, saw 40 of them in a bird refuge near Wartburg Seminary.

ORANGE-CROWNED WARBLER, *Vermivora celata celata*. The plain, inconspicuous appearance of this bird may allow it often to go unnoticed. Records would indicate that it is a fairly rare migrant, seldom more than a single bird being seen by only a few observers.

NASHVILLE WARBLER, *Vermivora ruficapilla ruficapilla*. This regular migrant usually betrays its presence by its song, and often requires much patience to locate. The bird is observed every year by practically all members of the bird club.

NORTHERN PARULA WARBLER, *Compsolthypis americana pusilla*. An uncommon migrant, the Parula has been seen most often at Linwood Cemetery. No one has heard its "little lisping trill".

EASTERN YELLOW WARBLER, *Dendroica aestiva aestiva*. The number of these summer residents is abundant. Because of its conspicuous coloration and its lack of the elusive shyness so characteristic of the family, it is the best known of the warblers.

MAGNOLIA WARBLER, *Dendroica magnolia*. This warbler is a regular migrant here, though never numerous. Such a handsome bird surely can not easily go unobserved.

CAPE MAY WARBLER, *Dendroica tigrina*. This bird is considered a fairly rare migrant in the Dubuque region. Lyle Bradley is the only member of the bird club who has observed the Cape May since 1937. On April 29, 1942, three of these warblers worked among the apple blossoms in his backyard, for two days.

BLACK-THROATED BLUE WARBLER, *Dendroica caerulescens caerulescens*. The Black-throated Blue is a rarity in the Dubuque area. On May 15, 1935, Ethan Hemsley made a determined effort to find it. Disregarding all other birds, he concentrated on finding the Black-throated Blue. He finally located a single bird, a female, positively identified by the square white patches on the wings. This find was in Linwood Cemetery, which was much more overgrown with underbrush than it is now. This is the only record of the bird.

MYRTLE WARBLER, *Dendroica coronata*. The earliest of the warblers to arrive, of recent years this bird has not been seen in such numbers as formerly. In 1942 the fall migration was unusually heavy. During the month of October, Mrs. Robert Ruegnitz watched a flock

of about 50 Myrtle Warblers feeding in trees about her home near Linwood Cemetery; they also enjoyed the luxury of the bird-bath.

BLACK-THROATED GREEN WARBLER, *Dendroica virens virens*. On May 14, 1933, a few observers saw a large flock of these birds feeding high in the tops of elm trees near the entrance to Linwood Cemetery. Since then, records show that only an occasional bird has been seen. May 4 is the earliest arrival date of this migrant.

CERULEAN WARBLER, *Dendroica cerulea*. The Cerulean is not very widely distributed, and like the Blue-wing must be hunted in its haunts. The records therefore, are dependent upon opportunity to get out to find the birds, and have been made almost entirely at the Durango ravine, where the bird presumably nests.

BLACKBURNIAN WARBLER, *Dendroica fusca*. There is at least one record of this migrant every year since 1931, except for 1941. On May 16, 1942, Lyle Bradley saw the bird at the Wartburg Seminary Refuge.

CHESTNUT-SIDED WARBLER, *Dendroica pensylvanica*. This fairly common migrant may be observed in all good warbler territory, not being restricted in distribution. Sometimes they feed in the tree tops, but they are usually seen in low bushes. The earliest recorded arrival date is May 7.

BAY-BREASTED WARBLER, *Dendroica castanea*. On the morning of May 16, 1937, a group of club members made close acquaintance with this bird at Linwood Cemetery. The male sitting in bright sunlight on the low branches of the pine trees, generously displayed his rich coloring, which contrasted vividly with the green of the pines. It is a fairly common migrant. On May 17, 1937, Ethan Hemsley saw several of these birds in his yard and identified seven kinds of warblers in one tree at the same time. Mr. Hemsley's place is situated on a high, wooded bluff not far from the river and attracts many birds. The spring of 1937 was outstanding for numbers of migrating warblers.

BLACK-POLL WARBLER, *Dendroica striata*. The Black-poll is supposed to be the last of our warblers to appear and, as a rule, its appearance indicates that the crest of the migration has passed. It passes through between May 6 and May 28.

NORTHERN PINE WARBLER, *Dendroica pinus pinus*. On April 25, 1942, Lyle Bradley heard several of these birds singing in the trees at Pine Hollow. This is a large tract of virgin white pine, now a state park, some 20 miles northwest of Dubuque.

WESTERN PALM WARBLER, *Dendroica palmarum palmarum*. On May 6, 1939, Mary Young, Ival Schuster and Margaret Kohlman Boyd saw a flock of about 100 of these migrants near Frenress Lake on the Illinois side of the river. They were fairly swarming in the bushes along the roadside. On May 11, 1942, Lyle Bradley observed a flock of about 100 in the Wartburg Bird Refuge. The birds are not often seen in such numbers, though they are common migrants.

OVEN-BIRD, *Scirurus auricapillus*. On a field trip of the bird club, May 18, 1941, a nest of the Oven-bird was found by Henry Herrmann, in the Durango ravine. It was imbedded in the ground, made of dried grass and arched over with grass and dead leaves, blending perfectly with its surroundings. The bird sat very still on the nest, as members came close to observe while Dr. Baumgartner took a picture. Finally the bird's patience was exhausted and it slipped off into the underbrush.

GRINNELL'S WATER-THRUSH, *Scirurus noveboracensis notabilis*. This migrant has been recorded regularly for many years, and seems to have been more numerous than the Louisiana.

LOUISIANA WATER-THRUSH, *Scirurus motacilla*. A group of Nature Club students with Clifford Johnson, on May 30, 1941, found the nest of this bird containing three young. In the spring of 1942, more of these birds were observed than in any previous year, and several nests were found.

KENTUCKY WARBLER, *Oporornis formosus*. This bird has not been positively identified at Dubuque, but according to DuMont it is a rare summer resident in eastern Iowa, and should be looked for. On a trip to Wyalusing Park, Wisconsin, some 50 miles northwest of Dubuque, Mr. and Mrs. Ralph W. Johnson saw the bird on May 30, 1941. They were attracted by the loud song, which resembles that of the Carolina Wren, and saw the bird at close range. The bird has also been seen at McGregor.

MOURNING WARBLER, *Oporornis philadelphia*. This fairly common migrant was first recorded by members of the club on a field trip, May 16, 1937. Since then there has been at least one record of the bird each year, except in 1942.

NORTHERN YELLOW-THROAT, *Geothlypis trichas brachidactyla*. The earliest record is May 3, for this cheerful singer which stays throughout the summer. It is equally at home among heavy cat-tail growths and drier surroundings where the nest is made on or near the ground, —a deep, cup-shaped abode.

YELLOW-BREASTED CHAT, *Icteria virens virens*. There are few records for this bird, and no breeding records.

WILSON'S WARBLER, *Wilsonia pusilla pusilla*. A few records are made every year for this regular migrant.

CANADA WARBLER, *Wilsonia canadensis*. Records of this bird with the black necklace indicate that it is an uncommon migrant. Mrs. Ralph Johnson has noted its presence in eight of the past 16 years.

AMERICAN REDSTART, *Setophaga ruticilla*. This abundant migrant and summer resident is not only one of the most conspicuously colored of the warblers, but is perhaps the most restless and active of this nervous family. The male bird is said to be still only when he is asleep, and the female only when incubating. The nest is a compact, cup-shaped structure placed in the fork of a sapling or bush usually within 15 feet of the ground.

GENERAL NOTES

Saw-whet Owl in Emmet County.—Late in April, 1942, a Saw-whet Owl was making its home in a cedar tree in the yard of the farm home of C. F. Wolden at High Lake in Emmet County. It was seen there for several weeks but later moved to a corn crib, where it was found dead on May 23. Lone individuals have been seen at the same place in other years but have not been known to remain so late in the spring.—B. O. WOLDEN, Estherville, Iowa.

An Unseasonable Snowstorm Kills Swallows.—On the night of September 26, 1942, snow fell here so that there was over an inch of snow in the morning. The snow was heavy and wet. The snowstorm caused loss of bird life in one locality, and I have wondered if this was only local or if the loss was widespread. At High Lake C. F. Wolden reported the death of many swallows. In the evening during the storm these birds were flying against the lighted windows of the residence. The next morning considerable numbers of dead swallows were found in the barn and other buildings where they had perished even after finding shelter from the falling snow. Most of the birds were Tree Swallows, but there were some Barn Swallows. In the corn crib five birds were closely huddled together and were alive but seemed exhausted. Since the birds died after finding shelter, one wonders whether they died from cold and snow, exhaustion, or starvation, or a combination of all these. For several days before the storm the weather was unseasonably cold with freezing temperatures the preceding two nights. Probably there had been few insects flying, and starvation might have been one of the causes as the birds seemed light and thin. The migrating birds were probably coming from even more unfavorable weather conditions than they found here.—B. O. WOLDEN, Estherville, Iowa.

Barn Swallows Caught by a Blizzard.—Mr. Wolden's report of swallows forced down by a snowstorm is quite similar to my observations in eastern Iowa. We had a very hard freeze on the night of September 24, 1942. In mid-afternoon of September 25 it began raining. The rain continued until shortly after six o'clock that evening, then it began to snow. A heavy snow fell all evening and most of the night. Although the earth was warm and most of the snow melted, there was still a good covering on the ground on the morning of the 26th. According to weather records, this was the first fall of snow in Iowa in September in more than 60 years.

A flock of 14 immature Barn Swallows were about our farm buildings on September 26, the day after the blizzard. They seemed to be weak and rather exhausted, and they tried to get into various out-buildings. That evening I saw several of them perched on horse collars in the barn and in other places of shelter. They acted somewhat bewildered. It is quite probable that the freeze killed aerial insects, their source of food, and the blizzard which followed disrupted their migration south. The entire flock appeared to be young birds, but they looked fat and round (perhaps this was because they fluffed their feathers out as protection against the cold, raw wind). Next day they were gone. Our regular Barn Swallow summer residents had left two weeks before, and we were much surprised to have this flock drop down out of the storm. This late migration would have passed over unnoticed had it not been for the blizzard. Barn Swallows and snow made an unusual picture.—FRED J. PIERCE, Winthrop, Iowa.

Stomach Contents of a Ruby-crowned Kinglet.—On January 1, 1942, a blizzard with a snowfall of 12.5 inches at Ames, followed by a period of zero weather, was very trying to birds in the vicinity. In the course of general field work, I came across the body of a male Ruby-crowned Kinglet under a large elm tree at the Iowa State College arboretum, January 10. The bird, fat and in good flesh, evidently had frozen to death. The stomach contained 20 recognizable aphids and a mass of aphid fragments larger than the mass of the 20. No other dead bird was found on approximately 100 acres of the arboretum that day.—RAY C. ERICKSON, Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

Feeding Habits of the Rose-breasted Grosbeak.—On May 7, 1922, I saw a male Rose-breasted Grosbeak (*Hedymeles ludovicianus*) picking food from the stems of the common sumac (*Rhus glabra* L.). Closer inspection revealed that nearly every stem was inhabited by several (from two to six) small beetles, which were later identified for me as *Elepharida rhois* Forst. Most of these beetles were in copulation. The grosbeak continued to feed upon these beetles for several minutes. Following this I found the same beetles in about the same numbers in two other patches of sumac. The color of the beetles harmonized splendidly with the sumac bark; but in spite of the apparent "protective" coloring they were readily found and devoured by the bird.

I have observed another food habit of the Rose-breasted Grosbeak, which I have not seen mentioned in the literature. Our yard contains a catalpa tree, upon which the seed pods hang until the following June. For the past eight or ten years I have seen the grosbeaks, upon their arrival in May, feeding upon the seeds which they were able to extract from the pods. The pods are from 10 to 15 inches long, and it is often necessary for the bird to climb down along the pod to find an opening. I have never been quite sure that the bird attempted to open the pod, or merely depended on finding it already burst. Having extracted a seed from the pod the bird would shuck it by manipulation in the mandibles.—T. C. STEPHENS, Sioux City, Iowa.

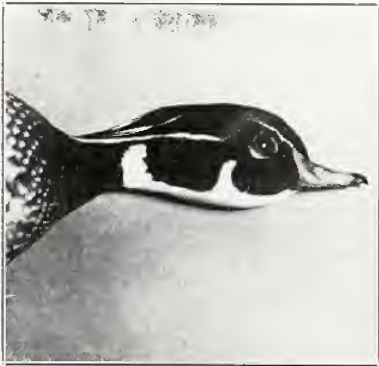
Some Recent Bird Records in the Sioux City Area.—On November 9, 1941, several members of the Sioux City Bird Club, including Mrs. W. J. Armour and myself, observed a Western Grebe at Brown's Lake. The bird was watched for several minutes at fairly close range and identification marks were plainly seen. The Bird Club saw a Whistling Swan on Mud Lake, in Union County, South Dakota, on April 19, 1942.

The Turkey Vulture is not often seen in the northern part of Woodbury County, but one was seen on March 30, 1941, near Riverside Park in Sioux City. On April 19, 1942, a Red-shouldered Hawk was seen by the Bird Club near Riverside Park. There are very few Broad-winged Hawks seen in this area in the summer, but one was observed on June 15, 1941, on the Winnebago Indian Reservation in Thurston County, Nebraska.

On October 25, 1941, a Winter Wren was seen at Brower's Lake by Monte Lloyd and myself. Its identification was very carefully checked. Three Rock Wrens were noted on August 10, 1941, about 3 miles east of Hornick. They were observed close to a gravel pit in places where cattle had trampled out the vegetation leaving the bare loess soil exposed on the hillside. On September 28, 1941, a female Arctic Towhee was seen near the Missouri River in Union County, South Dakota. Male Arctic Towhees were seen in Sioux City on October 18 and October 25, 1941. The first was seen near the Missouri River and the second in Stone Park. There would probably be more records of this species in western Iowa if observers learned to distinguish it from the Red-eyed Towhee.

The above records were all made by the writer, and in some cases in conjunction with other observers.—JEAN LAFFOON, Ann Arbor, Mich.

The Wood Duck Nests at McGregor.—For the third consecutive year, a family of Wood Ducks, sometimes called America's most beautiful game bird, located their nest in a "perfect" location near McGregor in 1942. The site is a high, hollow stump on a wooded hill above the



MALE WOOD DUCK
(From 'Iowa Conservationist')

Mississippi River, beside a path leading up from the foot of Main Street in McGregor. The setting meets what wildlife experts say are "musts" for a Wood Duck nest—woods, water, a hollow tree, and acorns for food. During the past two years the brood of young, numbering about 15 each time, left the nest about Memorial Day. The parent birds led them down to the Mississippi at that time. Getting the young birds to the water has been dramatic. The Jack Slyfield and Chas. Tipp families, living at the foot of the hill, have had to help the mother get a few stragglers of her brood to the water. Most of the youngsters have made their way down the path, guided by their mother's

directive calls from the water's edge, but both years a few strays came over the cliff into the Slyfield and Tipp yards. Their shrill, frightened peeping and the frantic quacking of the parents from the river cease when the strays are set down at the water's edge, to swim expertly away with the rest of the brood.—NORTH IOWA TIMES, McGregor, Iowa.

RECENT BIRD BOOKS

BIRDS OF NORTH CAROLINA, by Thomas Gilbert Pearson, Clement Samuel Brimley and Herbert Hutchinson Brimley (North Carolina State Museum, Raleigh, N. Car., 1942; cloth, pp. i-xxxii + 1-416, with 20 colored and 17 halftone pls., 142 figs.; price, \$3.50).

The number of state bird books grows year by year, as one state after another is represented by an authoritative volume covering its avifauna in a thorough manner. A new book on the birds of North Carolina now takes a deserved place on the lengthening shelf.

In 1919 a book on North Carolina birds was published by the same authors. It was a pioneer work in that it was the first book on the birds of any eastern state south of the Potomac and Ohio Rivers. Although a very useful book, it was allowed to become out of print and it has not been available to the general public for many years. The plan of revising the 1919 volume developed into a rewriting of the entire work—a task of no small proportions but one that has been very well executed, as a perusal of the new book shows. In this new state bird book the people of North Carolina and adjacent states have an excellent reference source for many future years.

An introductory chapter traces early ornithological records, which began at the extremely early year of 1584. The beginnings of American history included this ocean-bordered state, and casual bird observations appear in the writings of explorers and others who traversed the region. As is usually the case, the identity of various species is hard to establish from the early descriptions. The first real ornithologist to visit the state was Alexander Wilson. Later Elliott Coues visited North Carolina and listed 122 species at Fort Macon. Ensuing years have witnessed intensive ornithological work by a long list of distinguished ornithologists. The fruit of their work is embodied in the list of 396 species for North Carolina.

The descriptive list follows the plan of other state books. The species are listed in the A. O. U. order, and for each is given an account of haunts and habits, description of plumage, together with records of its occurrence in various parts of the state. These last references to place are usually names of counties. It seems regrettable that the book does not contain a map of the state so that these counties could be located without outside aid. The plate illustrations are by R. Bruce Horsfall and Roger Tory Peterson; those by the latter were taken from his well-known eastern 'Field Guide'. The text figures are by Peterson and Rex Brasher.—F. J. P.

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FADING TRAILS, by a Committee of the United States Department of the Interior (National Park Service, and Fish and Wildlife Service): Daniel B. Beard, Frederick C. Lincoln, Victor H. Cahalane, Hartley H. T. Jackson, Ben H. Thompson; artist, Walter A. Weber; edited by Charles Elliott (Macmillan Co., New York, 1942; cloth, pp. i-xv + 1-279, 4 colored plates and 32 black and white illustrations; price, \$3).

"But, vigilance and effort cannot be relaxed—must not be relaxed—in the programs of protection and restoration" [of wildlife], is the central theme of the last paragraph and of the book. Trained biologists and officials experienced in the conservation of wildlife during the past score of years, these men we know as inspired, tireless, constructive workers in the national wildlife protection and restoration movement. Quotations from Wm. T. Hornaday and J. N. Darling, respectively pioneer and recent stirring conservationists, testify to their influence on the thought and activities of the Committee. Supervisory or informational assistance is acknowledged from other Iowa reared or educated conservationists: Drs. I. N. Gabrielson, W. B. Bell, R. M. Anderson, A. M. Bailey, and F. N. Hamerstrom, Jr. Dr. T. C. Stephens furnished information from our region.

The first three chapters recount briefly the tragic losses of American wildlife, and the fourth summarizes the plans for proper wildlife utilization, protection, conservation, and restoration developed in the past, and reports on progress attained particularly during this century.

The next 27 chapters deal with about 50 endangered forms of wildlife: mammals, birds, fish, and the green turtle, the crocodile and the lobster. Pertinent items about their lives, habits, numbers and values, with specific conservation practices now in vogue and plans for the future are set forth clearly and authoritatively. Further, you are given specific tasks in the program and asked as a citizen to make certain definite decisions which you are to express to our democratic governmental bodies for their guidance in an action program. For instance, in Iowa we need compulsory reporting by sportsmen and trappers on their yearly take in order that the Conservation Commission may regulate the harvest better and know the numbers of seed-stock more accurately. Conservation of some of the animals, representing the whole continent, associated islands and oceans, requires closer co-operation with our neighbor nations. The effects of World War II are mentioned and special conservation suggestions are offered in several chapters.

The text is in excellent literary style, each chapter begins with a human experience with wildlife or an animal action story and carries you smoothly to the end. The well-done, chiefly animal action illustrations are enjoyably enlivening. The index is complete and usable.

The book, stimulating to all, can be read in a few evenings. Also, good for weeks of study, it will furnish excellent material for a series of club meetings emphasizing the conservation of wildlife, both in explicit and broad manner. The bibliography of some 70 recent books, bulletins, and magazine articles found in many public libraries can be used to expand personal and club reading and study. The article, 'Cover Requirements of the Eastern Ruffed Grouse in Northeast Iowa', by Emmett B. Polderboer in this issue, similar articles in back issues of 'Iowa Bird Life', and reprints of articles and bulletins from the Iowa Co-operative Wildlife Research Unit, Iowa State College, Ames, will be helpful supplements.—George O. Hendrickson.

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BIRDS ACROSS THE SKY, by Florence Page Jaques (Harper & Brothers, New York, 1942; cloth, pp. i-xiv + 1-240, with 25 full-page drawings by F. L. Jaques; price, \$2.50).

Here is a book to go along with gasoline rationing and nights at home. Written in a facile, enthusiastic style, Mrs. Jaques begins her story at the point where birds first entered her life. This was at the time of her marriage to Francis Lee Jaques, the bird artist. Under the tutorage of her ornithologist husband, she became bird-conscious, and though she had known nothing at all about birds, she made remarkable progress in identifying them. Her account is interesting and colorful—occasionally light and facetious. An excellent descriptive writer, she carries the story to her readers in a graphic way that will hold their interest through every chapter. Her birds really fly across the sky. They are found on nearly every page—sharply defined birds that are very much alive; their environment, too, is accurately described and is full of warmth and color.

The book should inoculate those who have never known birds. And it will be doubly interesting to those who are already addicted to bird-chasing. Most of us will smile as we recall experiences similar to those of Mrs. Jaques as she goes along learning bird lore—the field trip which her husband had looked forward to with much eagerness, but on which the start was made at the unearthly hour of 2:30 a.m.! They stop in the woods to hear the loud hoot of the Barred Owl. A little farther on the cry of the Whip-poor-will cuts the chill air as the first streaks of dawn are shooting across the eastern sky. What reminders for all of us!

Certainly few bird students, beginners or otherwise, have had Mrs. Jaques' opportunities to study birds in many climes—in Minnesota and the middle west, in Louisiana marshes, on Gaspé Peninsula, in England (then at peace), even Barro Colorado island in the Panama Canal and the Alps of Switzerland. While Mr. and Mrs. Jaques swing about the United States, touching almost every state, with side trips to Canada and foreign countries, the continuity of the narrative is somewhat broken. One chapter tells of what goes on behind the scenes of the great American Museum of Natural History in New York City, the side the public does not see. Selections from Mrs. Jaques' 'Canoe Country' and 'The Geese Fly High' are adapted for use in the present book. Mrs. Jaques has a wide acquaintance with American ornithologists. Her description, freely given, of their varied personalities is a human interest feature that will appeal to most readers. The book is good for several evenings of fine entertainment.—F. J. P.

MEMBERSHIP NEWS

M. L. Jones, Custodian of Waubesa State Park, is building up a fine series of kodachrome slides which he uses in conjunction with his nature talks to 4-H clubs, boy scouts and other organizations. These photographs are all of his own taking, and include scenic views from all parts of Iowa, bird portraits, wild flowers and related subjects.

One evening in September (the night of the unseasonable blizzard), Jean Laffoon of Sioux City stopped at the Editor's home for a brief visit. He was on his way, hitch-hiking, to Ann Arbor where he enrolled for graduate work at the University of Michigan. Jean is a professional hitch-hiker, having covered in the last year and a half over 16,000 miles in that way. Carrying a blanket and sleeping out under the stars in favorable weather, he covered most of the western and mid-western states in his travels, and added many birds to his "life list" while doing so. Malcolm McDonald of Fairfield has also made a record in this mode of traveling. He has covered the Atlantic seaboard and eastern states; in about a year and a half he traveled some 20,000 miles.

Mrs. Ray S. Dix, Cedar Falls, had an enjoyable trip in May. She went to California to visit her son, Maynerd, who was in training in the Army Air Corps. Enroute she took a side trip to Grand Canyon, and on the morning drive along the rim of the canyon she met another of our members, Dr. Robert Vane of Cedar Rapids, who was on his way to San Diego to report for duty with the U. S. Navy. They had last met on the field trip to Ten Mile Island north of Dubuque during our 1940 convention. Mrs. Dix took along a copy of Peterson's Western Guide and very much enjoyed her study of birds of the west and southwest.

In September Mr. and Mrs. Youngworth, Sioux City, had a week of driving in the high Rockies at altitude of 12,000 feet. Their road at one point was 5000 feet above the Colorado River, after which they made a trip along the upper Rio Grande; the entire trip covered about 2500 miles. Birds observed on this vacation included Snowy Heron, White Ibis, Evening Grosbeak, Steller's, Rocky Mountain and Pinon Jays, Clark's Crow, Raven, Green-tailed Towhee, Dipper and other western forms.

Floyd H. Davis, formerly a U. S. Game Management Agent stationed at Des Moines, is now a member of the U. S. Coast Guard. Dayle N. Crabb, a Sioux City member, enlisted in the U. S. Navy Medical Corps as a Pharmacist's Mate; when heard from in October he was in training at Portsmouth, Virginia. Frank M. Starr, a conservation officer at Storm Lake, has enlisted in the Navy.

A daughter, Jean Elaine, arrived at the home of Mr. and Mrs. Jack Musgrove, Des Moines, on October 27. Mrs. Musgrove was formerly Mary E. Roberts.